

PENT COOPERATION TREA

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF ELECTION
(PCT Rule 61.2)

Date of mailing (day/month/year) 28 September 2000 (28.09.00)
International application No. PCT/DK00/00005
International filing date (day/month/year) 07 January 2000 (07.01.00)
Applicant NORTUNG, René

To:

Assistant Commissioner for Patents
United States Patent and Trademark
Office
Box PCT
Washington, D.C.20231
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

1. The designated Office is hereby notified of its election made:

in the demand filed with the International Preliminary Examining Authority on:

03 August 2000 (03.08.00)

in a notice effecting later election filed with the International Bureau on:

2. The election was

was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer Manu Berrod Telephone No.: (41-22) 338.83.38
---	---

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Rene NORTUNG Attn: PCT Branch

Application No. U.S. National Stage of PCT/DK00/00005

Filed: June 19, 2001 Docket No.: 109870

For: A CONTROL DEVICE FOR A COMPUTER, USE OF A CONTROL DEVICE, A COMPUTER COMPRISING A CONTROL DEVICE, AND A METHOD OF CONNECTING AND DISCONNECTING UNITS IN A COMPUTER

**SUBMISSION OF THE ANNEXES TO THE
INTERNATIONAL PRELIMINARY EXAMINATION REPORT**

Director of the U.S. Patent and Trademark Office
Washington, D.C. 20231

Sir:

Attached hereto is the annexes to the International Preliminary Examination Report (Form PCT/IPEA/409). The attached material replaces the material in the claims at page 18, line 1 to page 21, line 32.

Respectfully submitted,



James A. Oliff
Registration No. 27,075

Thomas J. Pardini
Registration No. 30,411

JAO:TJP/cmm

Date: June 19, 2001

OLIFF & BERRIDGE, PLC
P.O. Box 19928
Alexandria, Virginia 22320
Telephone: (703) 836-6400

<p>DEPOSIT ACCOUNT USE AUTHORIZATION Please grant any extension necessary for entry; Charge any fee due to our Deposit Account No. 15-0461</p>
--

PATENT COOPERATION TREATY

PCT

REC'D 27 APR 2001

WIPO

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

14

Applicant's or agent's file reference P199801819WO	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/DK00/00005	International filing date (day/month/year) 07/01/2000	Priority date (day/month/year) 07/01/1999
International Patent Classification (IPC) or national classification and IPC G06F1/00		
Applicant REMEDAN APS. et al.		
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of 5 sheets.</p>		
<p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> I <input checked="" type="checkbox"/> Basis of the report II <input type="checkbox"/> Priority III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability IV <input type="checkbox"/> Lack of unity of invention V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement VI <input type="checkbox"/> Certain documents cited VII <input checked="" type="checkbox"/> Certain defects in the international application VIII <input type="checkbox"/> Certain observations on the international application 		

Date of submission of the demand 03/08/2000	Date of completion of this report 25.04.2001
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Van de Maele, L Telephone No. +49 89 2399 8805



**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/DK00/00005

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, pages:

1-17 as originally filed

Claims, No.:

1-18 as received on 24/02/2001 with letter of 22/02/2001

Drawings, sheets:

1/3-3/3 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- the language of publication of the international application (under Rule 48.3(b)).
- the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- contained in the international application in written form.
- filed together with the international application in computer readable form.
- furnished subsequently to this Authority in written form.
- furnished subsequently to this Authority in computer readable form.
- The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- the description, pages:
- the claims, Nos.:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/DK00/00005

the drawings, sheets:

5. This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):
(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims 1-18
	No: Claims
Inventive step (IS)	Yes: Claims 1-18
	No: Claims
Industrial applicability (IA)	Yes: Claims 1-18
	No: Claims

2. Citations and explanations
see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:
see separate sheet

Cited documents (the references relate to the sequence of appearance of the documents in the International Search Report):

D1: US 5202997 A
D4: US 5313639 A

ANNEX TO SECTION V

1. The subject-matter of **claims 1 to 15** appears to be new and to involve an inventive step.

Claim 1 defines a control device for selectively enabling peripherals of a computer system. The features of this device as defined in the preamble of **claim 1** are already known from D1.

The features of the characterising part defining a relationship between codes, input via a keyboard, and states, which determine what peripherals should be allowed, are already suggested in D4 in the form of a relationship between user input on the one hand and a password stored in the control device on the other hand. However, there is no teaching in D4 to only powering on the main board of the computer until after it has been established which peripherals should be enabled. More in particular D4 merely teaches to hold the clock of the main board while determining whether or not there is a match between input and stored password. Furthermore, it should also be taken into account that D4 relates to a different problem. More in particular, it relates to password protected access to a (compete) system and not to selectively enabling of peripherals.

The feature of such control devices which do not power on the main board until after it has determined which peripherals are to be enabled are not known or even suggested in any of the other documents cited in the International Search Report.

Therefore, **claim 1**, as well as its dependent **claims 2 to 15**, meet the requirements of *Article 33 PCT*.

2. Independent **claim 16** relates to a computer system which includes a control device as defined in **claim 1**. Therefore also this claim as well as its dependent **claim 17** meet the requirements of *Article 33 PCT*.
3. **Claim 18** defines the use the claimed control device in a computer system and therefore, on the basis of the *Preliminary Guidelines, C-III, 4.9*, also meets the requirements of *Article 33 PCT*.

ANNEX TO SECTION VII

1. Contrary to the requirements of *Rule 5.1(a)(ii) PCT*, the relevant background art disclosed in the documents D1 and D4 is not mentioned in the description, nor are these documents identified therein.
2. The description is not conform with the (amended) claims as required by *Rule 5.1(a)(iii) PCT*.

Claims:

1. A control device (1) for use with a computer (2),
the computer having a motherboard (4) and one or more
5 units (7, 8, 9, 18), and a power supply unit (11) for
supplying electrical power to the motherboard and to the
one or more units, and electrical interconnections (3A,
3B, 3C, 3D, 6, 5A, 5B, 12A, 12B, 12C, 12D, 10) for inter-
connecting the motherboard, the one or more units and the
10 power supply unit, the computer being capable of operat-
ing in at least a first state, in which a first group of
the one or more units are operable, and in a second
state, in which a second group of the one or more units
are operable,

15 the control device being adapted, in dependence on the
state in which the computer is to operate, to establish
selected ones of the electrical interconnections so as to
make corresponding units operable, and to interrupt
selected ones of the electrical interconnections so as to
20 make corresponding units inoperable,

characterized in that the control device
comprises an input device (20, 21) by means of which one
or more codes may be supplied to the control device, and
means (24) which specify a relation between codes and the
25 states, and which is adapted, on the basis of codes re-
ceived through the input device and of the relation be-
tween codes and the states, to select a state in which
the computer is to operate and to establish the electri-
cal interconnections to the group of units to be operable
30 in the selected state, and following this, and before the
computer is configured, to establish the electrical

interconnection (6) between the power supply unit and the motherboard.

2. A control device according to claim 1, characterized in that it comprises one or more connectors for one or more of the units, and that the control device is adapted to establish and interrupt the interconnections by the use of the connectors.

5 3. A control device according to claim 2, characterized in that one or more of the connectors are data connectors, and that the control device is adapted to establish and interrupt the interconnections by the use of the data connectors.

10 4. A control device according to claim 2 or 3, characterized in that one or more of the connectors are command and control connectors, and that the control device is adapted to establish and interrupt the interconnections by the use of the command and control connectors.

15 5. A control device according to claim 2, characterized in that one or more of the connectors are power connectors, and that the control device is adapted to establish and interrupt the interconnections by the use of the power connectors.

20 6. A control device according to one or more of the preceding claims, characterized in that the input device comprises a keyboard (20) by means of which the one or more codes may be supplied to the control device.

25 7. A control device according to one or more of the preceding claims, characterized in that the

input device comprises a card-reading unit (21) by means of which the one or more codes may be supplied to the control device.

8. A control device according to one or more of the preceding claims, characterized by comprising a device adapted to ensure that the specification of the relation between the codes and the states is allowed only after the submission of a predefined code.

9. A control device according to one or more of claims 2-8, characterized in that it comprises a supervisory unit (35) which is adapted to currently supervise contact with one or more of the units both before, during and after the first start and re-start, and that the control device is adapted, on the basis of this, to 15 select the state in which the computer is to operate.

10. A control device according to claim 9, characterized in that the supervision comprises identification of one or more of the units.

11. A control device according to claim 9 or 10, 20 characterized in that the supervisory unit is adapted to perform measurement of operational data, and that the control device is adapted, on the basis of this, to select the state in which the computer is to operate.

25 12. A control device according to one or more of claims 9-11, characterized in that it is enclosed by a cabinet, and that the supervisory device comprises means adapted to currently determine whether the cabinet has been opened, and that the control device is adapted, 30 on the basis of this, to select the state in which the computer is to operate.

AMENDED SHEET

13. A control device according to one or more of the preceding claims, characterized in that the supervisory device comprises a timer device, and that the control device is adapted, on the basis of this, to select the state in which the computer is to operate.

5

14. A control device according to one or more of the preceding claims, characterized by comprising an output device which is adapted to show information on the current state of the computer.

10 15. A control device according to one or more of the preceding claims, characterized in that it comprises one or more measuring devices adapted to measure external influences, such as temperature, air humidity and vibrations, and that the control device is

15 adapted, on the basis of this, to select the state in which the computer is to operate.

16. A computer comprising

a motherboard (4) and one or more units (7, 8, 9, 18), and a power supply unit (11) for supplying electrical power to the motherboard and to the one or more units, and electrical interconnections (3A, 3B, 3C, 3D, 6, 5A, 5B, 12A, 12B, 12C, 12D, 10) for interconnecting the motherboard, the one or more units and the power supply unit, the computer being capable of operating in at least

20 a first state, in which a first group of the one or more units are operable, and in a second state, in which a second group of the one or more units are operable, and

25 a control device adapted, in dependence on the state in which the computer is to operate, to establish selected ones of the electrical interconnections so as to make corresponding units operable, and to interrupt selected

30

ones of the electrical interconnections so as to make corresponding units inoperable,

characterized in that the control device comprises an input device (20, 21) by means of which one or more codes may be supplied to the control device, and means (24) which specify a relation between codes and the states, and which is adapted, on the basis of codes received through the input device and of the relation between codes and the states, to select a state in which the computer is to operate and to establish the electrical interconnections to the group of units to be operable in the selected state, and following this, and before the computer is configured, to establish the electrical interconnection (6) between the power supply unit and the motherboard.

17. A computer according to claim 16, characterized in that a cabinet encloses the computer, and that the supervisory device comprises means adapted to currently determine whether the cabinet has been opened, and that the control device is adapted, on the basis of this, to select the state in which the computer is to operate.

18. Use of a control device according to one or more of claims 1-15 in connection with a personal computer.

AMENDED SHEET

PCT**REQUEST**

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.

RECORD COPY

For receiving Office use only

LBH/MLR

PCT/DK00/00005

International Application

International Filing Date

07 JANUARY 2000

Danish Patent and
Trademark Office

Name of receiving Office and PCT International Application

Applicant's or agent's file reference
(if desired) (12 characters maximum)

P199801819WO

Box No. I TITLE OF INVENTION A control device for a computer, use of a control device, a computer comprising a control device, and a method of connecting and disconnecting units in a computer.

Box No. II APPLICANT

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

Remedan ApS.
Gydevang 39-41
DK-3450 Allerød
Denmark

 This person is also inventor.

Telephone No.

Facsimile No.

Teleprinter No.

State (that is, country) of nationality:
DK Denmark

State (that is, country) of residence:
DK Denmark

This person is applicant for the purposes of: all designated States all designated States except the United States of America the United States of America only the States indicated in the Supplemental Box

Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

NORTUNG, René
Kongevejen 15
DK-3450 Allerød
Denmark

This person is:

 applicant only applicant and inventor inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:
DK Denmark

State (that is, country) of residence:
DK Denmark

This person is applicant for the purposes of: all designated States all designated States except the United States of America the United States of America only the States indicated in the Supplemental Box

 Further applicants and/or (further) inventors are indicated on a continuation sheet.**Box No. IV AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE**

The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as:

 agent common representative

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

Hofman-Bang A/S
Hans Bekkevolds Allé 7
DK-2900 Hellerup
Denmark

Telephone No.

+45 39488000

Facsimile No.

+45 39488080

Teleprinter No.

19 085 hbb.dk

Address for correspondence: Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.

Box N .V DESIGNATION OF STATES

The following designations are hereby made under Rule 4.9(a) (mark the applicable check-boxes; at least one must be marked):

Regional Patent

AP ARIPO Patent: GH Ghana, GM Gambia, KE Kenya, LS Lesotho, MW Malawi, SD Sudan, SL Sierra Leone, SZ Swaziland, TZ United Republic of Tanzania, UG Uganda, ZW Zimbabwe, and any other State which is a Contracting State of the Harare Protocol and of the PCT

EA Eurasian Patent: AM Armenia, AZ Azerbaijan, BY Belarus, KG Kyrgyzstan, KZ Kazakhstan, MD Republic of Moldova, RU Russian Federation, TJ Tajikistan, TM Turkmenistan, and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT

EP European Patent: AT Austria, BE Belgium, CH and LI Switzerland and Liechtenstein, CY Cyprus, DE Germany, DK Denmark, ES Spain, FI Finland, FR France, GB United Kingdom, GR Greece, IE Ireland, IT Italy, LU Luxembourg, MC Monaco, NL Netherlands, PT Portugal, SE Sweden, and any other State which is a Contracting State of the European Patent Convention and of the PCT

OA OAPI Patent: BF Burkina Faso, BJ Benin, CF Central African Republic, CG Congo, CI Côte d'Ivoire, CM Cameroon, GA Gabon, GN Guinea, GW Guinea-Bissau, ML Mali, MR Mauritania, NE Niger, SN Senegal, TD Chad, TG Togo, and any other State which is a member State of OAPI and a Contracting State of the PCT (if other kind of protection or treatment desired, specify on dotted line)

National Patent (if other kind of protection or treatment desired, specify on dotted line):

<input checked="" type="checkbox"/> AE United Arab Emirates	<input checked="" type="checkbox"/> LR Liberia
<input checked="" type="checkbox"/> AL Albania	<input checked="" type="checkbox"/> LS Lesotho
<input checked="" type="checkbox"/> AM Armenia	<input checked="" type="checkbox"/> LT Lithuania
<input checked="" type="checkbox"/> AT Austria and Utility Model	<input checked="" type="checkbox"/> LU Luxembourg
<input checked="" type="checkbox"/> AU Australia	<input checked="" type="checkbox"/> LV Latvia
<input checked="" type="checkbox"/> AZ Azerbaijan	<input checked="" type="checkbox"/> MA Morocco
<input checked="" type="checkbox"/> BA Bosnia and Herzegovina	<input checked="" type="checkbox"/> MD Republic of Moldova
<input checked="" type="checkbox"/> BB Barbados	<input checked="" type="checkbox"/> MG Madagascar
<input checked="" type="checkbox"/> BG Bulgaria	<input checked="" type="checkbox"/> MK The former Yugoslav Republic of Macedonia
<input checked="" type="checkbox"/> BR Brazil	
<input checked="" type="checkbox"/> BY Belarus	
<input checked="" type="checkbox"/> CA Canada	
<input checked="" type="checkbox"/> CH and LI Switzerland and Liechtenstein	
<input checked="" type="checkbox"/> CN China	
<input checked="" type="checkbox"/> CR Costa Rica	
<input checked="" type="checkbox"/> CU Cuba	
<input checked="" type="checkbox"/> CZ Czech Republic and Utility Model	
<input checked="" type="checkbox"/> DE Germany and Utility Model	
<input checked="" type="checkbox"/> DK Denmark and Utility Model	
<input checked="" type="checkbox"/> DM Dominica	
<input checked="" type="checkbox"/> EE Estonia and Utility Model	
<input checked="" type="checkbox"/> ES Spain	
<input checked="" type="checkbox"/> FI Finland and Utility Model	
<input checked="" type="checkbox"/> GB United Kingdom	
<input checked="" type="checkbox"/> GD Grenada	
<input checked="" type="checkbox"/> GE Georgia	
<input checked="" type="checkbox"/> GH Ghana	
<input checked="" type="checkbox"/> GM Gambia	
<input checked="" type="checkbox"/> HR Croatia	
<input checked="" type="checkbox"/> HU Hungary	
<input checked="" type="checkbox"/> ID Indonesia	
<input checked="" type="checkbox"/> IL Israel	
<input checked="" type="checkbox"/> IN India	
<input checked="" type="checkbox"/> IS Iceland	
<input checked="" type="checkbox"/> JP Japan	
<input checked="" type="checkbox"/> KE Kenya	
<input checked="" type="checkbox"/> KG Kyrgyzstan	
<input checked="" type="checkbox"/> KP Democratic People's Republic of Korea	
<input checked="" type="checkbox"/> KR Republic of Korea	
<input checked="" type="checkbox"/> KZ Kazakhstan	
<input checked="" type="checkbox"/> LC Saint Lucia	
<input checked="" type="checkbox"/> LK Sri Lanka	
<input checked="" type="checkbox"/> UZ Uzbekistan	
<input checked="" type="checkbox"/> VN Viet Nam	
<input checked="" type="checkbox"/> YU Yugoslavia	
<input checked="" type="checkbox"/> ZA South Africa	
<input checked="" type="checkbox"/> ZW Zimbabwe	

Check-boxes reserved for designating States which have become party to the PCT after issuance of this sheet:

.

Precautionary Designation Statement: In addition to the designations made above, the applicant also makes under Rule 4.9(b) all other designations which would be permitted under the PCT except any designation(s) indicated in the Supplemental B x as being excluded from the scope of this statement. The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit. (Confirmation (including fees) must reach the receiving Office within the 15-month time limit.)

RO/0K 18. FEB 2000

Sheet N . . . 3 . . .

Box No. VI PRIORITY CLAIM

 Further priority claims are indicated in the Supplemental Box.

Filing date of earlier application (day/month/year)	Number of earlier application	Where earlier application is:		
		national application: country	regional application: regional Office	international application: receiving Office
item (1) 07 Jan. 1999	PA 1999 00011	Denmark		
item (2)				
item (3)				

The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) (only if the earlier application was filed with the Office which for the purposes of the present international application is the receiving Office) identified above as item(s):

* Where the earlier application is an ARIPO application, it is mandatory to indicate in the Supplemental Box at least one country party to the Paris Convention for the Protection of Industrial Property for which that earlier application was filed (Rule 4.10(b)(ii)). See Supplemental Box.

Box No. VII INTERNATIONAL SEARCHING AUTHORITY

Choice of International Searching Authority (ISA) (if two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used):

ISA / SE

Request to use results of earlier search; reference to that search (if an earlier search has been carried out by or requested from the International Searching Authority):

Date (day/month/year) Number Country (or regional Office)

Box No. VIII CHECK LIST; LANGUAGE OF FILING

This international application contains the following number of sheets:

request : 3

description (excluding sequence listing part) : 17

claims : 4

abstract : 1

drawings : 3

sequence listing part of description : 1

Total number of sheets : 28

This international application is accompanied by the item(s) marked below:

1. fee calculation sheet
2. separate signed power of attorney
3. copy of general power of attorney; reference number, if any:
4. statement explaining lack of signature
5. priority document(s) identified in Box No. VI as item(s): 1
6. translation of international application into (language):
7. separate indications concerning deposited microorganism or other biological material
8. nucleotide and/or amino acid sequence listing in computer readable form
9. other (specify): Copy of off. action in DK PA199900011

Figure of the drawings which should accompany the abstract:

1

Language of filing of the international application:

Danish

Box No. IX SIGNATURE OF APPLICANT OR AGENT

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request).

Remedan ApS.



René Nortung
Director



René Nortung

1. Date of actual receipt of the purported international application:

07 JAN 2000

(07.01.00)

3. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application:

4. Date of timely receipt of the required corrections under PCT Article 11(2):

5. International Searching Authority (if two or more are competent): ISA /

6. Transmittal of search copy delayed until search fee is paid.

2. Drawings:

 received: not received:

Date of receipt of the record copy by the International Bureau:

For International Bureau use only

31 JAN 2000

(31.01.00)

See Notes to the request form

1/3

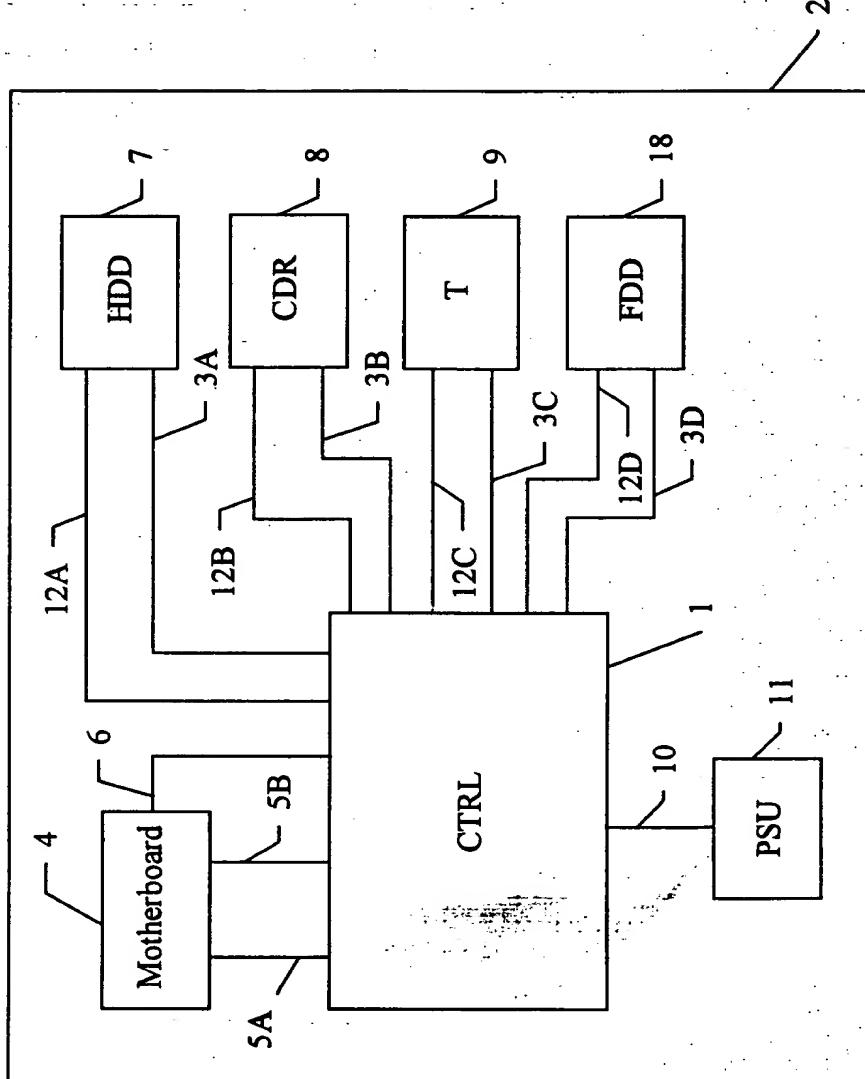
19

FIG. 1

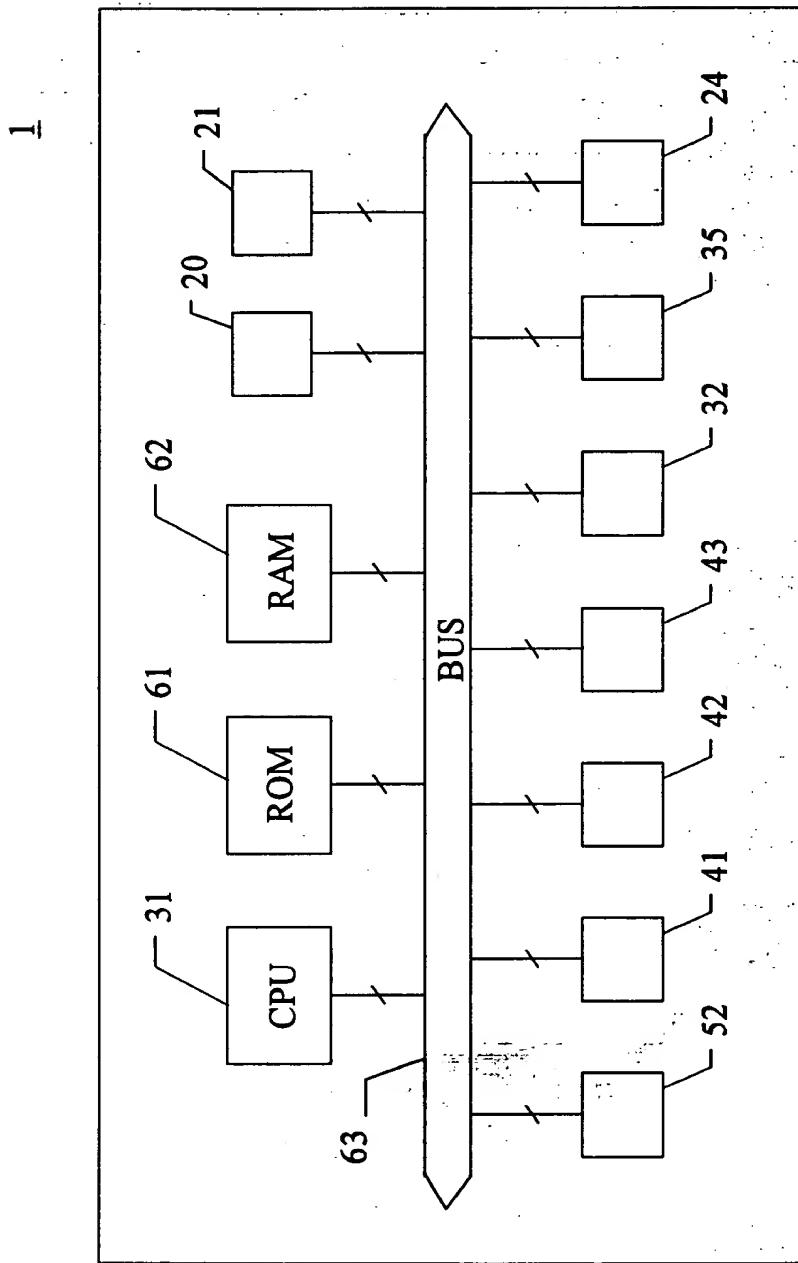


FIG. 3

Kontrolanordning til en computer, anvendelse af en kontrolanordning, computer omfattende en kontrolanordning, samt fremgangsmåde til ind- og udkobling af enheder i en computer

5

Opfindelsen angår en kontrolanordning til en computer.

Det er velkendt, at computere typisk er opbygget af en række enheder, såsom floppy-diskette-drev, harddiske, modem, netværkstilslutning, og grafikacceleratorkort. Det er i denne forbindelse af interesse, at kunne bringe computeren til at operere i flere forskellige tilstande, hvor enheder ind- og udkobles i afhængighed af den valgte tilstand. Det er f.eks. ønskeligt, at tilgang til en enhed tillades i en første tilstand, mens denne tilgang ikke tillades i en anden tilstand. Det kan bl.a. være ønskeligt for at sikre personlig data på en computers harddisk, der benyttes af flere brugere. Denne sikring kan f.eks. både bestå i en sikring mod utilsigtet beskadigelse af personlige data, og en sikring mod spredning af virus mellem enheder i computeren.

Det er derfor af interesse at tilvejebringe en kontrolanordning til computere med en eller flere enheder, hvor nævnte computer kan operere i mindst to tilstande, og hvor nævnte kontrolanordning er indrettet til at ind- og udkoble nævnte enheder i afhængighed af tilstanden, hvori computeren skal operere.

US 5,434,562 beskriver en kontrolanordning til en computer med en eller flere enheder. Kontrolanordningen omfatter kontaktanordninger, som brugeren kan skifte mellem forskellige positioner. Kontaktens position er bestemmede for tilgangsmuligheden til en given enhed. Eksempelvis kan kontakten i en første position afbryde dataforbindel-

serne til en harddisk, mens den i en anden position kan etablere dataforbindelserne.

Det er et formål med opfindelsen at tilvejebringe en kontrolanordning af den ovenfor omtalte type, som muliggør at en computer på simpel vis kan bringes i en blandt en række specificerede tilstande som reducerer risikoen for, at brugeren bringer computeren i en uønsket tilstand blandt nævnte række af tilstande, og som kan sikre optimal ressouracetildeling ved at tilstand eksempelvis tilpasses brugerens behov.

Dette formål opnås ifølge opfindelsen ved, at nævnte kontrolanordning omfatter en input-anordning, hvormed kontrolanordningen kan tilføres en eller flere koder, og midler, der specificerer en sammenhæng mellem koder og nævnte tilstande, og som er indrettet til på basis heraf at vælge tilstanden, hvori computeren skal operere før computeren er tilsluttet strømforsyning og er konfigureret.

Herved opnås, at kontrolanordningen kan foretage tilstandsspecifik tildeling af ressourcer, således at computeren kan optimeres til forskellige opgaver i forskellige tilstande. Tildeling af ressourcer sker inden at computeren er tilsluttet strømforsyning. Dette medfører, at eksempelvis at data, der skal være tilgængelig i nogle tilstande kan sikres i andre tilstande. Dette er eksempelvis ønskeligt når en computer benyttes af flere brugere, og ved sikring af udvalgte dele af computeren mod computer-virus. Eksempelvis er det ikke muligt at bruge computeren til at ændre forud tildelt tilstand. Yderligere opnås den væsentlige fordel, at det er muligt at forhindre en ændring af nævnte specificerede sammenhæng mellem koder og nævnte tilstande fra computeren. Dette muliggøres ved, at kontrolanordningen bestemmer tilstande, hvori computeren

skal operere, før computeren tilføres strøm og herved kan startes. Således kan ønsket adgang til kontrolanordningen forhindres.

- 5 Kontrolanordningen ifølge opfindelsen giver yderligere den fordel, at denne er simpel at bruge i forbindelse med computere med mange enheder og som ønskes benyttet i flere forskellige tilstande.
- 10 En anden udførelsesform kendetegnes ved at nævnte enheder omfatter en eller flere masselagringsenheder. Herved opnås mulighed for sikring af data i givne tilstande.

I en foretrukken udførelsesform omfatter kontrolanordningen en eller flere forbindelser til en eller flere af nævnte enheder, og kontrolanordningen er indrettet til at foretage nævnte ind- og udkobling ved anvendelse af nævnte forbindelser.

- 15
- 20 I en særlig foretrukken udførelsesform er en eller flere af nævnte forbindelser dataforbindelser, og kontrolanordningen er indrettet til at foretage nævnte ind- og udkobling ved at slutte og afbryde nævnte dataforbindelser.

25 I en anden særlig foretrukken udførelsesform er en eller flere af nævnte forbindelser styre- og kontrolforbindelser, og kontrolanordningen er indrettet til at foretage nævnte ind- og udkobling ved påvirkning af nævnte styre- og kontrolforbindelser.

- 30
- 35 I en tredie særlig foretrukken udførelsesform er en eller flere af nævnte forbindelser strømforbindelser, og kontrolanordningen er indrettet til at foretage nævnte ind- og udkobling ved at slutte og afbryde nævnte strømforbindelser.

I en udførelsesform omfatter nævnte input-anordning et tastatur, hvormed kontrolanordningen kan tilføres nævnte en eller flere koder. Herved opnås, at en bruger nemt og på simpel vis kan angive en kode, og risikoen for at 5 bringe computeren i en uønsket tilstand minimeres herved.

I endnu en udførelsesform omfatter nævnte input-anordning en kortlæseenhed, hvormed kontrolanordningen kan tilføres nævnte en eller flere koder. Herved opnås den fordel, at 10 der på simpel vis kan foretages en entydig identifikation af brugeren, hvis der benyttes kort indeholdende bruger-specifikke kort koder.

I en yderligere udførelsesform omfatter kontrolanordningen en anordning indrettet til at sikre, at nævnte specifivering af sammenhængen mellem nævnte koder og nævnte tilstande kun tillades efter afgivelse af en given kode. Herved opnås en sikkerhed mod uønsket ændring af nævnte tilstande, idet kun udvalgte brugere kan foretage ændringer af nævnte specifikation. 15 20

I en hensigtsmæssig udførelsesform omfatter kontrolanordningen en overvågningsenhed, der er indrettet til løbende at overvåge kontakt med en eller flere af nævnte enheder, 25 og at kontrolanordningen er indrettet til på denne baggrund at vælge tilstanden, hvori computeren skal operere. Tilstanden kan således vælges både før, under og efter første start og genstart af computeren. Herved forhindres at en bruger tilsigtet eller utilsigtet eksempelvis om- 30 bytter forbindelsen til diverse ydre enheder og hermed kunne opnå uønsket adgang til en eller flere af disse enheder.

Kravene 10-15 angiver yderligere fordelagtige udførelsesformer af kontrolanordningen ifølge opfindelsen. 35

Opfindelsen angår også en computer omfattende en kontrolanordning, hvor nævnte computer omfatter en eller flere enheder, hvor nævnte computer kan operere i mindst to tilstande, og hvor nævnte kontrolanordning er indrettet
5 til at ind- og udkoble nævnte enheder i afhængighed af tilstanden, hvori computeren skal operere, hvor nævnte kontrolanordning yderligere omfatter en input-anordning, hvormed kontrolanordningen kan tilføres en eller flere koder, og midler, der specificerer en sammenhæng mellem
10 koder og nævnte tilstande, og som er indrettet til på basis heraf at vælge tilstanden, hvori computeren skal operere.

I en foretrukken udførelsesform omfatter nævnte enheder
15 en styreenhed.

Opfindelsen angår yderligere en fremgangsmåde til ind- og udkobling af enheder i en computer, som kan operere i mindst to tilstande, hvor nævnte ind- og udkobling foretages i afhængighed af tilstanden, hvori computeren skal operere, hvori tilstanden, hvori computeren skal operere vælges på baggrund af en eller flere tilførte koder og en specificeret sammenhæng mellem koder og nævnte tilstande.
25 Endelig angår opfindelsen anvendelse af en kontrolanordning i forbindelse med en personlig computer.

Opfindelsen vil nu blive beskrevet nærmere i det følgende under henvisning til tegningen, hvor
30 figur 1 illustrerer en udførelsesform af en computer med en kontrolanordning ifølge opfindelsen,

figur 2 viser en udførelsesform af en kontrolanordning
35 ifølge opfindelsen, og

figur 3 viser yderligere en udførelsesform af en kontrolanordning ifølge opfindelsen.

I det følgende beskrives en foretrukken udførelsesform af en kontrolanordning ifølge opfindelsen. Det skal dog nævnes, at en kontrolanordning ifølge opfindelsen kan implementeres på adskillige måder, hvor den i det følgende viste blot er en af disse. I det opfindelsen både angår en kontrolanordning til en computer og en computer med en kontrolanordning af denne type beskrives i det følgende hhv. en kontrolanordning 1 ifølge opfindelsen og en computer, der omfatter en kontrolanordning 1 ifølge opfindelsen. I den viste udførelsesform er kontrolanordningen 1 indbygget i en computer 19.

15

Computeren omfatter et antal enheder: et mother-board 4, en eller flere masselagringsanordninger, en strømforsyning 11, og en eller flere transmissionsanordninger 9. Nævnte mother-board eller bundkort 4 er forbundet til kontrolanordningen 1 via et antal forbindelser 5A, 5B, 6. Forbindelsen 5A kan eksempelvis være en dataforbindelse, der kan benyttes til dataoverførsel mellem nævnte bundkort 4 og kontrolanordningen 1, mens forbindelsen 5B eksempelvis kan være en styre- og kontrolforbindelse, hvorved kontrolanordningen kan styre og kontrollere bundkortet 4. Forbindelsen 6 illustrerer en strømforbindelse mellem kontrolanordningen 1 og bundkortet 4. Denne forbindelse 6 kan benyttes til at forsyne bundkortet 4 med strøm.

30

Kontrolanordningen 1 er ligeledes forbundet til strømforsyningen 11 via strømforbindelsen 10, der er indrettet til at føre en strøm fra strømforsyningen 11 til kontrolanordningen 1. Som nævnt omfatter enhederne i computeren også en eller flere masselagringsanordninger. I den viste udførelsesform omfatter disse masselagringsanordninger:

en harddisk 7, et CD-ROM-drev 8 og et floppy-diskettedrev 18. Det skal dog nævnes, at en lang række masselagringsanordninger kan benyttes i denne sammenhæng. Foruden harddisk, floppy-diskettedrev og CD-ROM-drev kan der f.eks. nævnes: ZIP-drev, SyQuest-drev, MO-drev, båndstationer, RAM-kort, RAM-diske.

På tilsvarende måde som kontrolanordning 1 var forbundet med bundkortet 4 med et antal forbindelser, er kontrolanordningen forbundet til de øvrige enheder. I det viste eksempel er kontrolanordning 1 forbundet med harddisk 7 via forbindelserne 3A og 12A. Forbindelsen 3A illustrerer en strømforbindelse, der er indrettet til at føre strøm fra kontrolanordningen 1 til harddisken 7. Forbindelsen 12A illustrerer en dataforbindelse, der er indrettet til at føre data til og fra kontrolanordningen 1 og harddisken 7. I det viste eksempel optræder der således kun to forbindelser 3A, 12A mellem kontrolanordningen 1 og harddisken 7, men et større antal forbindelser kunne naturligvis være til stede, f.eks. kunne der optræde et antal kontrol- og styreforbindelser mellem kontrolanordningen 1 og harddisken 7, hvorved kontrolanordningen 1 kunne styre funktionen af nævnte harddisk. Disse forbindelser er dog ikke vist i det aktuelle tilfælde.

På tilsvarende vis er kontrolanordningen 1 forbundet med de øvrige masselagringsanordning. Der optræder således forbindelser mellem kontrolanordningen 1 og CD-ROM-drevet 8 og i det viste eksempel illustrerer forbindelsen 3B en styre- og kontrolforbindelse, hvorved kontrolanordningen kan styre og kontrollere funktionen af CD-ROM-drevet 8. Forbindelsen 12B illustrerer en strømforbindelse, som er indrettet til at forsyne CD-ROM-drevet 8 med strøm. Floppy-diskettedrevet 18 er ligeledes forbundet til kontrolanordningen 1 ved et antal forbindelser. Også i dette tilfælde er der vist to forbindelser, selv om der natur-

ligvis kan optræde et vilkårligt antal forbindelser mellem disse enheder, og forbindelsen 3D illustrerer en dataforbindelse, mens en styre- og kontrolforbindelse er illustreret med forbindelsen 12D.

5 Endelig omfatter computerens enheder en transmissionsanordning 9, der som de øvrige enheder er forbundet med kontrolanordningen 1. Som for de øvrige enheder illustrerer forbindelserne mellem kontrolanordningen 1 og transmissionsanordningen 9, at der kan optræde et antal forskellige forbindelser mellem disse. Eksempelvis kan forbindelsen 3C tænkes at være en strømforbindelse, mens forbindelsen 12C kan illustrere en dataforbindelse.

10 15 Det skal bemærkes, at selv om alle enhederne i det viste eksempel er forbundet til kontrolanordningen 1, kan computeren naturligvis også indeholde et antal enheder, der ikke er forbundet til kontrolanordningen, men som fungerer ved at have direkte forbindelser til en eller flere andre enheder i computeren 19. Sådanne enheder er dog ikke illustreret på figuren, idet disse ikke er særligt relevante i forhold til opfindelsen.

25 Som det fremgår af figuren, er kontrolanordning 1 således forbundet til et antal af computerens enheder. Kontrolanordningen er indrettet således, at denne kan ind- og udkoble enhederne på en sådan måde, at en indkoblet enhed kan bringes i forbindelse med en anden indkoblet enhed, og således, at udkobling af en enhed kan forhindre, at 30 andre enheder kan komme i kontakt med denne enhed. Computeren 19 er indrettet til at kunne operere i mindst to tilstande, og kontrolanordning 1 er indrettet til at ind- og udkoble enhederne i afhængighed af tilstanden, hvori computeren skal operere. Eksempelvis kan det tænkes, at 35 computeren i en given tilstand ikke tillader adgang til harddisken 7. I denne situation kan kontrolanordningen 1

således foretage udkobling af enheden 7, mens enheder, der ønskes at være tilgængelige for andre enheder i computeren, indkobles før opstart.

5 Som det vil blive beskrevet i det følgende er kontrolanordningen 1 indrettet til at kunne tilføres en eller flere koder, og kontrolanordningen 1 omfatter midler, der 10 specificerer sammenhængen mellem koder og nævnte tilstande. Disse midler er indrettet til på-basis af den givne kode, at vælge tilstanden, hvori computeren skal operere.

Kontrolanordningen 1 kan således bringe computeren i et antal tilstande på baggrund af en eller flere tilførte koder. Ved at tilslutte et stort antal enheder til kontrolanordningen er det således muligt at specificere en lang række tilstande, hvori computeren kan operere, og ved at lade kontrolanordningen være forbundet til bundkortet 4 er det f.eks. også muligt at udkoble bundkortet 4 og herved forhindre, at computeren kan fungere. Dette 20 kan eksempelvis benyttes i situationen, hvor den eller de tilførte koder ikke accepteres af kontrolanordningen. Disse forhold vil blive beskrevet nærmere i det følgende.

Det kan yderligere nævnes, at computeren 19 kan omfatte 25 et kabinet 2, hvori en eller flere af nævnte enheder er indbygget. I det viste tilfælde omslutter kabinetet 2 således samtlige af computerens enheder samt kontrolanordningen 1.

Som det fremgår af figuren omfatter computeren 19 et kabinet 2. I en særlig hensigtsmæssig udførelsesform er kontrolanordningen 1 indrettet til at detektere om kabinetet 2 har været åbnet, og på denne baggrund at vælge tilstanden, hvori computeren eller PC'en opererer - f.eks. at bringe PC'en eller dele heraf i en låst tilstand, således at denne/disse ikke kan benyttes direkte. Dette kan implementeres ved at kontrolanordningen er for-

bundet med en mekanisk kontakt 43 i PC'en. Kontakten 43 aktiveres ved åbning af PC'en. Ved at lade enheden være drevet af egen strømforsyning, f.eks. batteri, opnås at denne detektering kan foretages selv når PC'en er slukket. Ved indbrud gives et signal til kontrolanordningen 1, der så kan blokere for samtlige eller udvalgte enheder. Strømforsyning til PC'en kan afbrydes herved. Administrator skal starte PC igen. I en hensigtsmæssig udførelsesform kan kabinetet 2 aflåses.

10

Figur 2 illustrerer en mulig opbygning af en kontrolanordning 1 ifølge opfindelsen. Kontrolanordningen omfatter input-anordninger 20 og 21, midler 24, der specificerer sammenhæng mellem koder og tilstande, samt midler 32, der er indrettet til at foretage ind- og udkobling af enheder. Som det fremgår af figuren er midlerne 32 tilført et antal forbindelser, som er nummereret svarende til forbindelserne i figur 1. Disse forbindelser tænkes således at skabe forbindelser mellem nævnte midler 32 og diverse enheder i computeren 19.

Som tidligere nævnt er kontrolanordningen 1 indrettet til at kunne foretage ind- og udkobling af et antal tilsluttede enheder. Denne ind- og udkobling foretages i det vieste eksempel ved benyttelser af midlerne 32, der er indrettet til at foretage denne ind- og udkobling ved anvendelse af de tilførte forbindelser. I tilfældet hvor en forbindelse er en dataforbindelse kan denne ind- og udkobling foretages af midlerne 32 ved at slutte eller afbryde nævnte dataforbindelser, f.eks. ved benyttelse af en kontakt, et relæ, eller lignende. I tilfældet, hvor nævnte forbindelser er styre- og kontrolforbindelser, kan nævnte ind- og udkobling foretages ved at påvirke udvalgte styre- og kontrolforbindelser på passende vis. Eksempelvis kan en tilstand, hvor der kun tillades læsning af data fra en masselagringsanordning, opnås ved at kontrol-

anordningen 1 tilfører et "read only" signal til den aktuelle masselagringsanordning. Der kan foretages tilsvarende ind- og udkobling af enheder ved benyttelse af andre passende styre- og kontrolsignaler såsom M/B, systemets reset og device enable.

Som det fremgår af figuren er nævnte input-anordninger 20 og 21 forbundet til midlerne 24, der specificerer sammenhæng mellem koder og tilstande. Dette muliggør, at den 10 bruger eksempelvis ved benyttelse af tastaturet 20, ved benyttelse af en kortlæser 21, eller ved kombination af disse kan tilføre midlerne 24 en eller flere koder. På baggrund af den tilførte kode vil midlerne 24 kunne angive en tilstand og ved at tilføre information om denne 15 tilstand til midlerne 32 kan disse midler 32 bringes til at udføre ind- og udkoblingen svarende til den ønskede tilstand.

Der kan naturligvis benyttes mange forskellige input-anordninger. Tastaturet 20 kan således implementeres på adskillige kendte måder og kan f.eks. være et numerisk tastatur, alfanumerisk tastatur, både numerisk og alfanumerisk tastatur, osv. Tilsvarende kan kort-læseinput-anordningen 21 implementeres på forskellig kendt vis, 25 f.eks. som en der er en magnetkortlæser, en chip-card-læser eller et vilkårligt andet kort, der kan indeholde den nødvendige kode. Det bemærkes yderligere, at andre typer af input-anordninger naturligvis kan benyttes. Blandt mange muligheder kan det f.eks. nævnes, at finger-30 aftryk, ansigtsgenkendelse og stemmegenkendelse benyttes i forbindelse med persongenkendelse, og at kontrolenheden 1 på basis heraf kan vælge en personspecifik tilstande, hvori computeren skal operere.

35 Det bemærkes, at der ligeledes findes adskillige måder, hvorpå en bruger kan kræves at angive en eller flere ko-

der på. Det kan eksempelvis være hensigtsmæssigt at kombinere flere af nævnte input-anordninger ved indlæsning af disse koder. F.eks. kan der laves en brugeridentifikation i tre trin: kode fra et smart-card-læser 21, PIN kode indtastet via tastaturet 20, samt ved benyttelse af EPROM indeholdene unikt nummer på kontrolanordningen. Disse tre numre vil tilsammen give en høj sikkerhed for brugerens fysiske tilstedeværelse på et givet tidspunkt og given computer.

10

Det kan f.eks. tænkes, at en computer benyttes i fælleskab af to brugere, og at enhver bruger derfor tilknyttes en kode, som specificerer den ønskede tilstand, hvori computeren ønskes at operere, når denne bruger benytter computeren. Dette kan beskrives ved følgende eksempel.

Flere brugere kan benytte samme maskine med forskellige rettigheder og opsætninger, idet der benyttes dedikeret hardware for den enkelte bruger. F.eks. kan samme brugere kan løbe forskellig risiko f.eks. med hensyn til virus på forskellige hardwarekonfigurationer. Tilsvarende muliggøres på simpel vis benyttelse af flere operativsystemer i samme computer. Yderligere kan der opnås sikkerhed for en brugers software ikke ødelægger en anden brugers opsætning eller data som f.eks. sønnens spil og faderens regnskab.

Som det fremgår af figuren omfatter kontrolanordning 1 også en overvågningsenhed 35. Denne overvågningsenhed 35 kan f.eks. være indrettet til løbende at overvåge kontakt med en eller flere af de tilsluttede enheder og er indrettet til på denne baggrund at vælge tilstanden, hvori computeren opererer. Herved opnås, at det er muligt at registrere, når en enhed kobles til eller fra og evt. at gemme relevante oplysninger om dette, f.eks. tidspunkt, den foretagne ændring og efterfølgende handlinger. På

denne baggrund kan kontrolenheden 1 bestemme, hvilken tilstand computeren skal operere i, f.eks. at denne skal bringes i en låst tilstand, hvor yderligere brug ikke er muligt umiddelbart for en bruger uden specielle systemrettigheder. Nedenfor beskrives de forskellige forhold i forbindelse med modem, netkort og ISDN-adaptor.

Modem. I forbindelse med et tilsluttet modem benytter kontrolanordningen hensigtsmæssigt en modemstyringsenhed.

10 Nævnte modem er indrettet til at kunne afbrydes eller tilsluttes efter bruger ID og brugeropsætning bestemt af administrator. Modemstyringsenheden er en elektronisk enhed, der afbryder linien fysisk i modem før "ring detection". Derved kan modem ikke styres udefra linien. Derved sikres, at opsætning styres efter bruger ID og opsætning. Der er endvidere et sensorkredsløb til at måle, om telefonlinien har været afbrudt til sikring imod ombytning af tilslutninger til eksterne net (utilsigtet ændring udenom ID). Dette sker ved at måle liniespændingen.

20 Netkort. Det er indrettet til at kunne afbrydes eller tilsluttes efter bruger ID og brugeropsætning bestemt af administrator. Der er endvidere et sensorkredsløb til at måle, om netledningen (UTP) har været afbrudt til sikring imod ombytning af tilslutninger til eksterne net (utilsigtet ændring udenom ID). Et sensorkredsløb mäter tilstede værelsen af tilslutning/afbrydelse af netværkstilslutningsledning (patch kabel). Endvidere aflæses link signalet også i stand-by (kun netspænding på strømforsyning). Dette sikrer for netværksadministrator, at bruger eller andre i ond vilje ikke ombytter netværksforbindelser, tilsigtet eller utilsigtet. Ved afbrydelser eller ombytning af netværk låser enheden maskinen og alle HW afbrydes indtil gyldig adgangsbetingelse (smartcard, password etc.) er givet. Opsætningen bestemmer, hvem der har administrator-rettigheder.

ISDN Adaptor. Det er indrettet til at kunne afbrydes eller tilsluttes efter bruger ID og brugeropsætning bestemt af administrator. Der er endvidere et stimulerings/sen-
5 sorkredsløb til at måle, om ISDN-forbindelsen har været afbrudt til sikring imod ombytning af tilslutninger til eksterne net (utilsigtet ændring udenom ID). Dette sikrer for netværksadministrator, at bruger eller andre i ond vilje ikke ombytter netværksforbindelser, tilsigtet eller
10 utilsigtet. Ved afbrydelser eller ombytning af ISDN låser enheden maskinen og alle HW afbrydes indtil adgangsbetin-
gelse (smartcard, password etc.) er givet. Opsætningen bestemmer, hvem der har administrator rettigheder.

15 Som det fremgår at figur 2 omfatter kontrolanordningen 1 et kabinet 50. På tilsvarende måde som beskrevet i for-
bindelse med computerens kabinet 2 kan kontrolanordningen være indrettet til på baggrund af information om kabinet-
tet har været åbnet og på denne baggrund at vælge til-
20 standen, hvori computeren skal operere.

Selvom det ikke direkte er vist i figur 2 vil en kontrol-
anordning 1 hensigtsmæssigt være opbygget omkring en sty-
reenhed, der foretager nævnte kontrol af computerens en-
25 heder i samspil med kontrolanordningens 1 øvrige dele.
Dette beskrives nærmere i forbindelse med figur 3.

Figur 3 viser et simpelt eksempel på, hvorledes kontrol-
anordningen kan tænkes opbygget. Kontrolanordningen om-
30 fatter en styreenhed 31, som kan være en normal CPU, et
ROM-lager 61, der kan indeholde programkode og statisk
data, samt et RAM-lager 62, der på kendt vis kan benyttes
som datalager, der løbende kan ændres. Disse enheder kan
eksempelvis være forbundet til en data-/kontrol-bus 63,
35 ligesom kontrolanordningens 1 øvrige enheder kan være
forbundet til denne bus 63. Som det fremgår af figuren

5 vil en kontrolanordning 1 i denne udførelsesform således have form som en normal computer, og i denne situation er der således tale om, at kontrolanordningen principielt er opbygget som en PC, der kan indbygges i en anden computer, således at kontrolanordningen 1 kan ind- og udkoble enheder i computeren 19 afhængig af dennes tilstand.

10 At kontrolanordningen 1 kan opbygges som en selvstændig PC i computeren 19 giver en række fordele. Eksempelvis giver det mulighed for at bruge kontrolanordningen 1 til selvstændigt at arbejde på Internettet. Fordelen ved denne egenskab er, at man uden risiko for spredning af virus fra nettet kan være på Internettet samtidig med lokalnetværk uden at skulle genstarte PC.

15 Kontrolanordningen 1 giver således foruden mulighed for at styre rettigheder på hardware-niveau eksempelvis også mulighed for at benytte tilstandsspecifikke brugergrænseflader. Det skal understreges, at kontrolenheden 1 kan 20 implementeres på adskillige måder, men som eksempel kan det nævnes, at denne kan tænkes at være udformet således, at den kan indbygges i et standard 5½-tomme-slot i en ATX 2,01 (eller højere) kompatibel PC, men den kan ligeledes tænkes at være forbundet på passende vis til en vilkårlig 25 anden computer.

30 Ved at midlerne 24, der specificerer sammenhæng mellem koder og tilstande er lagret i "non-volatile-memory", opnås, at disse rettigheder kun kan specificeres af en udvalgt person, eksempelvis en systemadministrator, som har speciel adgang til disse, f.eks. ved at kunne benytte computeren i en tilstand, som giver både læse- og skriverettigheder til midlerne 24.

35 I en udførelsesform omfatter kontrolanordningen 1 en overvågningenhed 35, der er forbundet med en eller flere

forbindelser til computerens 19 ydre enheder. Dette er særligt hensigtsmæssigt, når overvågningsenheden er forbundet til ydreneheder, som er mulige at identificere. Herved kan der eksempelvis opnås en sikring mod uønsket 5 ombytning af forbindelser til enheder, f.eks. forbindelser til eksterne net.

Nævnte overvågningsenhed 35 omfatter i en yderligere udførelsesform en måleanordning 42, og som er forbundet til 10 midlerne 32. Måleanordningen er der er indrettet til at fortage måling af driftsdata såsom luftfugtighed, temperatur, rystelser/vibrationer, strøm, spænding og effekt på passende steder i nævnte computer, og kontrolanordningen 1 er indrettet til på denne baggrund at vælge tilstanden, hvori computeren opererer. Driftsspændinger måles f.eks. på strømforsyning og perifere enheder. Effektforbrug bestemmes f.eks. på baggrund af strøm-/spændingsmålinger på enheder og totalt fra strømforsyning.

15 20 Herved sikres mod beskadigelse af enheder som følge af uacceptable 'driftsdata', f.eks. når en given specificeret tærskelværdi overskrides.

I en yderligere hensigtsmæssig udførelsesform omfatter 25 nævnte overvågningsenhed 35 en timer 41, der ligeledes kan være forbundet til midlerne 32. Timeren eller uret 41 kan eksempelvis benyttes til at måle den samlede tid en given bruger har benyttet computeren eller udvalgte enheder såsom modem eller andet, men kan også benyttes til at 30 sikre at computeren kun må benyttes til givne formål på givne tidspunkter af givne brugere. Denne styring kan foretages ved at uret 41 eksempelvis er forbundet til midlerne 32, der på baggrund af informationen fra uret udfører passende udkobling af enheder.

Det bemærkes, at figurerne er skematiske og forenkledе af hensyn til overskueligheden, og de viser kun detaljer, som er væsentlige for forståelsen af opfindelsen, mens andre detaljer er udeladt. Overalt anvendes de samme hen-
5 visningstal for identiske eller tilsvarende dele.

I det forestående er der vist nogle eksempler på udførelsesformer af et kontrolanordning ifølge opfindelsen og en computer med et kredsløb ifølge opfindelsen. Det skal dog
10 understreges, at opfindelsen ikke er begrænset til de vi-
ste udførelsesformer, men kan antage andre udførelsesfor-
mer inden for det, der angives i de efterfølgende krav.
For eksempel kan kontrolanordningen i omfatte en output-
15 anordning, såenhed såsom et LCD-display eller en konven-
tionel skærm. Herved opnås at kontrolanordningen kan for-
syne brugeren med diverse information. Kontrolenheden kan
dog også være tilsluttet til computernes skærm og være
indrettet til at forsyne brugeren med information via
denne.

Patentkrav:

1. Kontrolanordning til en computer med en eller flere enheder, hvor nævnte computer kan operere i mindst to tilstande, og hvor nævnte kontrolanordning er indrettet til at ind- og udkoble nævnte enheder i afhængighed af tilstanden, hvori computeren skal operere, kendte tegn ved, at nævnte kontrolanordning omfatter en input-anordning, hvormed kontrolanordningen kan tilføres en eller flere koder, og midler, der specificerer en sammenhæng mellem koder og nævnte tilstande, og som er indrettet til på basis heraf at vælge tilstanden, hvori computeren skal operere før computeren er tilsluttet strømforsyning og er konfigureret.
2. Kontrolanordning ifølge krav 1, kendte tegn ved, at omfatte en eller flere forbindelser til en eller flere af nævnte enheder, og at kontrolanordningen er indrettet til at foretage nævnte ind- og udkobling ved anvendelse af nævnte forbindelser.
3. Kontrolanordning ifølge krav 2, kendte tegn ved, at en eller flere af nævnte forbindelser er dataforbindelser, og at kontrolanordningen er indrettet til at foretage nævnte ind- og udkobling ved at slutte og afbryde nævnte dataforbindelser.
4. Kontrolanordning ifølge krav 2 eller 3, kendte tegn ved, at en eller flere af nævnte forbindelser er styre- og kontrolforbindelser, og at kontrolanordningen er indrettet til at foretage nævnte ind- og udkobling ved påvirkning af nævnte styre- og kontrolforbindelser.
5. Kontrolanordning ifølge krav 2, kendte tegn ved, at en eller flere af nævnte forbindelser er strøm-

forbindelser, og at kontrolanordningen er indrettet til at foretage nævnte ind- og udkobling ved at slutte og afbryde nævnte strømforbindelser.

- 5 6. Kontrolanordning ifølge et eller flere af de foregående krav, k e n d e t e g n e t ved, at nævnte inputanordning omfatter et tastatur, hvormed kontrolanordningen kan tilføres nævnte en eller flere koder.
- 10 7. Kontrolanordning ifølge et eller flere af de foregående krav, k e n d e t e g n e t ved, at nævnte inputanordning omfatter en kortlæseenhed, hvormed kontrolanordningen kan tilføres nævnte en eller flere koder.
- 15 8. Kontrolanordning ifølge et eller flere af de foregående krav, k e n d e t e g n e t ved, at omfatte en anordning indrettet til at sikre, at nævnte specificering af sammenhængen mellem nævnte koder og nævnte tilstande kun tillades efter afgivelse af en given kode.
- 20 9. Kontrolanordning ifølge en eller flere af kravene 2-8, k e n d e t e g n e t ved, at omfatte en overvågningsenhed, der er indrettet til løbende at overvåge kontakt med en eller flere af nævnte enheder, både før, under og efter første start og genstart og at kontrolanordningen er indrettet til på denne baggrund at vælge tilstanden, hvori computeren skal operere.
- 25 10. Kontrolanordning ifølge krav 9, k e n d e t e g -
30 n e t ved, at nævnte overvågning omfatter identifikation af en eller flere af nævnte enheder.
- 35 11. Kontrolanordning ifølge krav 9 eller 10, k e n d e -
t e g n e t ved, at nævnte overvågningsenhed er indrettet til at fortage måling af driftsdata, og at kontrolanord-

ningen er indrettet til på denne baggrund at vælge tilstanden, hvori computeren skal operere.

12. Kontrolanordning ifølge et eller flere af kravene 9-5 11, kendtegnet ved, at være omsluttet af et kabinet, og hvor nævnte overvågningsanordning omfatter midler, der er indrettet til løbende at bestemme om nævnte kabinet har været åbnet, og at kontrolanordningen er indrettet til på denne baggrund at vælge tilstanden, 10 hvor computeren skal operere.

13. Kontrolanordning ifølge et eller flere af de foregående krav, kendtegnet ved, at nævnte overvågningsanordning omfatter en tidsanordning, og at kontrolanordningen er indrettet til på denne baggrund at vælge tilstanden, hvor computeren skal operere.

14. Kontrolanordning ifølge et eller flere af de foregående krav, kendtegnet ved, at omfatte en 20 output-anordning, der er indrettet til at vise information om computerens aktuelle tilstand.

15. Kontrolanordning ifølge et eller flere af de foregående krav, kendtegnet ved, at omfatte en 25 eller flere måleanordninger, der er indrettet til at måle ydre påvirkninger, såsom temperatur, luftfugtighed og rystelser, og at kontrolanordningen er indrettet til på denne baggrund at vælge tilstanden, hvor computeren skal operere.

30

16. Computer omfattende en kontrolanordning, hvor nævnte computer omfatter en eller flere enheder, hvor nævnte computer kan operere i mindst to tilstande, og hvor nævnte kontrolanordning er indrettet til at ind- og udkoble 35 nævnte enheder i afhængighed af tilstanden, hvor computeren opererer, kendtegnet ved, at nævnte

kontrolanordning yderligere omfatter en input-anordning, hvormed kontrolanordningen kan tilføres en eller flere koder, og midler, der specificerer en sammenhæng mellem koder og nævnte tilstande, og som er indrettet til på basis heraf at vælge tilstanden, hvori computeren skal operere.

17. Computer ifølge krav 16, k e n d e t e g n e t ved, at nævnte enheder omfatter en styreenhed.

10

18. Computer ifølge krav 16 eller 17, k e n d e t e g - n e t ved, at være omsluttet af et kabinet, og hvor nævnte overvågningsanordning omfatter midler, der er indrettet til løbende at bestemme om nævnte kabinet har været åbnet, og at nævnte kontrolanordning er indrettet til på denne baggrund at vælge tilstanden, hvori computeren skal operere.

19. Fremgangsmåde til ind- og udkobling af enheder i en computer, som kan operere i mindst to tilstande, hvor nævnte ind- og udkobling foretages i afhængighed af tilstanden, hvori computeren skal operere, k e n d e - t e g n e t ved, at tilstanden, hvori computeren skal operere vælges på baggrund af en eller flere tilførte koder og en specificeret sammenhæng mellem koder og nævnte tilstande.

20. Anvendelse af en kontrolanordning ifølge en eller flere af kravene 1-15 i forbindelse med en personlig com-
30 puter.

Kontrolanordning til en computer, anvendelse af en kontrolanordning, computer omfattende en kontrolanordning, samt fremgangsmåde til ind- og udkobling af enheder i en computer

SAMMENDRAG

Opfindelsen angår en kontrolanordning til en computer samt computer omfattende en kontrolanordning. Computeren omfatter en eller flere enheder, og computeren kan operere i mindst to tilstande. Kontrolanordningen er indrettet til at ind- og udkoble nævnte enheder i afhængighed af tilstanden, hvori computeren skal operere. Kontrolanordningen omfatter en input-anordning, hvormed kontrolanordningen kan tilføres en eller flere koder, og midler, der specificerer en sammenhæng mellem koder og nævnte tilstande. Kontrolanordningen er indrettet til på baggrund af en tilført kode at vælge tilstanden, hvori computeren skal operere, før den er tilsluttet strømforsyning og er konfigureret.

Opfindelsen angår yderlige en fremgangsmåde til ind- og udkobling af enheder i en computer samt anvendelse af en kontrolanordning i forbindelse med en personlig computer.

(Figur 1)

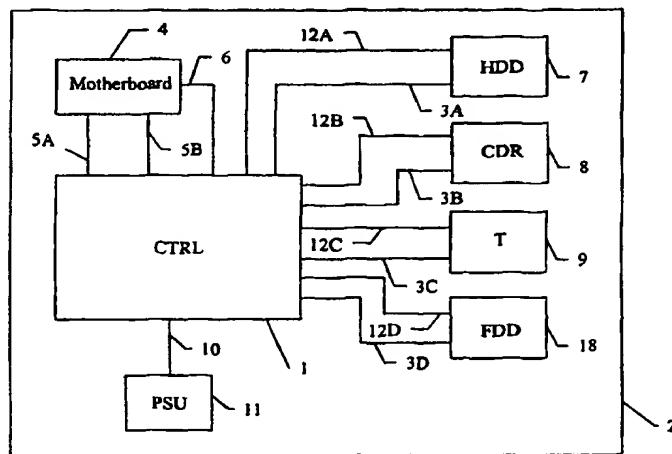


INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁷ : G06F 1/00, 12/14	A1	(11) International Publication Number: WO 00/43855
		(43) International Publication Date: 27 July 2000 (27.07.00)

(21) International Application Number: PCT/DK00/00005	(81) Designated States: AE, AL, AM, AT, AT (Utility model), AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, CZ (Utility model), DE, DE (Utility model), DK, DK (Utility model), DM, EE, EE (Utility model), ES, FI, FI (Utility model), GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (Utility model), SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).
(22) International Filing Date: 7 January 2000 (07.01.00)	
(30) Priority Data: PA 1999 00011 7 January 1999 (07.01.99)	DK
(71) Applicant (for all designated States except US): REMEDAN APS. [DK/DK]; Gydevang 39-41, DK-3450 Allerød (DK).	
(72) Inventor; and	
(75) Inventor/Applicant (for US only): NORTUNG, René [DK/DK]; Kongevejen 15, DK-3450 Allerød (DK).	
(74) Agent: HOFMAN-BANG A/S; Hans Bekkevolds Allé 7, DK-2900 Hellerup (DK).	
	Published <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i> <i>In English translation (filed in Danish).</i>

(54) Title: **A CONTROL DEVICE FOR A COMPUTER, USE OF A CONTROL DEVICE, A COMPUTER COMPRISING A CONTROL DEVICE, AND A METHOD OF CONNECTING AND DISCONNECTING UNITS IN A COMPUTER**



12

(57) Abstract

The invention relates to a control device for a computer and to a computer comprising a control device. The computer comprises one or more units, and the computer can operate in at least two states. The control device is adapted to connect and disconnect the units in dependence on the state in which the computer is to operate. The control device comprises an input device by means of which one or more codes may be supplied to the control device, and means which specify a relation between codes and the states. On the basis of a supplied code, the control device is adapted to select the state in which the computer is to operate before it is connected to a power supply and is configured. The invention moreover relates to a method of connecting and disconnecting units in a computer and to the use of a control device in connection with a personal computer.

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece	ML	Mali	TR	Turkey
BG	Bulgaria	HU	Hungary	MN	Mongolia	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MR	Mauritania	UA	Ukraine
BR	Brazil	IL	Israel	MW	Malawi	UG	Uganda
BY	Belarus	IS	Iceland	MX	Mexico	US	United States of America
CA	Canada	IT	Italy	NE	Niger	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NL	Netherlands	VN	Viet Nam
CG	Congo	KE	Kenya	NO	Norway	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NZ	New Zealand	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	PL	Poland		
CM	Cameroon	KR	Republic of Korea	PT	Portugal		
CN	China	KZ	Kazakhstan	RO	Romania		
CU	Cuba	LC	Saint Lucia	RU	Russian Federation		
CZ	Czech Republic	LI	Liechtenstein	SD	Sudan		
DE	Germany	LK	Sri Lanka	SE	Sweden		
DK	Denmark	LR	Liberia	SG	Singapore		
EE	Estonia						

A control device for a computer, use of a control device, a computer comprising a control device, and a method of connecting and disconnecting units in a computer

5 The invention relates to a control device for a computer.

It is well-known that computers are typically composed of a plurality of units, such as floppy disk drives, hard disks, modems, network connections and graphical accelerator cards. It is of interest in this connection to be able to cause the computer to operate in several different states where units are connected and disconnected in dependence on the selected state. It is e.g. desirable that access to a unit is allowed in a first state, while 10 this access is not allowed in a second state. This may inter alia be desirable in order to secure personal data on the hard disk of a computer which is used by several users. This security can e.g. comprise security against 15 unintentional destruction of personal data as well as security against spreading of virus between units in the 20 computer.

It is therefore of interest to provide a control device for computers with one or more units where the computer 25 can operate in at least two states, and where the control device is adapted to connect and disconnect the units in dependence on the state in which the computer is to operate.

30 US 5 434 562 describes a control device for a computer with one or more units. The control device comprises switch devices which the user can switch between various positions. The position of the switch determines the access to a given unit. For example, in a first position 35 the switch can interrupt the data connections to a hard

disk, while in a second state it can establish the data connections.

It is an object of the invention to provide a control device of the above-mentioned type which makes it possible to bring the computer into one of a number of specified states in a simple manner, which reduces the risk of the user bringing the computer into an undesired state among said number of states, and which can ensure optimum resource allocation in that the state is e.g. adapted to the user's needs.

This object is achieved according to the invention in that the control device comprises an input device by means of which one or more codes may be supplied to the control device, and means which specify a relation between codes and said states, and which are adapted, on the basis of this, to select the state in which the computer is to operate before the computer is connected to a power supply and is configured.

This ensures that the control device can make a state-specific allocation of resources so that the computer may be optimized for various tasks in various states. Allocation of resources takes place before the computer is connected to the power supply. This means that e.g. data which must be accessible in some states may be secured in other states. This is desirable e.g. when a computer is used by several users and for securing selected parts of the computer against computer virus. For example, it is not possible to use the computer for changing a pre-allocated state. In addition, the important advantage is achieved that it is possible to prevent a change in said specified relation between codes and said states from the computer. This is made possible in that the control device determines states in which the computer is to oper-

ate before the computer is supplied with current and can be started. Thus, undesired access to the control device is prevented.

5 The control device according to the invention gives the further advantage that it is simple to use in connection with computers having many units and which is desirably used in several different states.

10 Another embodiment is characterized in that said units comprise one or more mass storage units. This enables security of data in given states.

15 In a preferred embodiment, the control device comprises one or more connections to one or more of said units, and the control device is adapted to perform said connection and disconnection by the use of said connections.

20 In a particularly preferred embodiment one or more of said connections are data connections, and the control device is adapted to perform said connection and disconnection by making and breaking said data connections.

25 In a second particularly preferred embodiment, one or more of said connections are command and control connections, and the control device is adapted to perform said connection and disconnection by affecting said command and control connections.

30 In a third particularly preferred embodiment, one or more of said connections are current connections, and the control device is adapted to perform said connection and disconnection by making and breaking said current connections.

In an embodiment, the input device comprises a keyboard by means of which said one or more codes may be supplied to the control device. This ensures that a user can define a code easily and simply, and the risk of bringing 5 the computer into an undesired state is minimized hereby.

In still another embodiment, the input device comprises a card reading unit by means of which said one or more codes may be supplied to the control device. This provides the advantage that unique identification of the 10 user may be performed in a simple manner if cards containing user-specific card codes are used.

In a further embodiment, the control device comprises a 15 device to ensure that said specification of the relation between said codes and said states is allowed only after the submission of a given code. This provides security against undesired change of said states, as only selected users can make changes of said specification.

20

In an expedient embodiment the control device comprises a supervisory unit which is adapted to currently supervise contact with one or more of said units, and the control device is adapted, on the basis of this, to select the 25 state in which the computer is to operate. The state may thus be selected both before, during and after the first start and re-start of the computer. This ensures that a user cannot intentionally or unintentionally e.g. switch the connection to various peripheral units and hereby obtain 30 unauthorized access to one or more of these units.

Claims 10-15 define further advantageous embodiments of the control device according to the invention.

35 The invention also relates to a computer comprising a control device, said computer comprising one or more

units, said computer being capable of operating in at least two states, said control device being adapted to connect and disconnect said units in dependence on the state in which the computer is to operate, said control 5 device additionally comprising an input device by means of which one or more codes may be supplied to the control device, and means which specify a relation between codes and said states, and which are adapted, on the basis of this, to select the state in which the computer is to operate. 10

In a preferred embodiment, said units comprise a control unit.

15 The invention additionally relates to a method of connecting and disconnecting units in a computer which can operate in at least two states, said connection and disconnection being performed in dependence on the state in which the computer is to operate, wherein the state in 20 which the computer is to operate is selected on the basis of one or more supplied codes and a specified relation between codes and said states.

Finally, the invention relates to the use of a control 25 device in connection with a personal computer.

The invention will now be described more fully below with reference to the drawing, in which

30 figure 1 illustrates an embodiment of a computer with a control device according to the invention,

fig. 2 shows an embodiment of a control device according to the invention, and

figure 3 shows a further embodiment of a control device according to the invention.

A preferred embodiment of a control device according to
5 the invention will be described below. It should be mentioned, however, that a control device according to the invention may be implemented in several ways, the one illustrated below being just one of these. As the invention relates to a control device for a computer as well as a
10 computer with a control device of this type, a description will be given below of a control device 1 according to the invention and a computer comprising a control device 1 according to the invention, respectively. In the embodiment shown, the control device 1 is incorporated in
15 a computer 19.

The computer comprises a plurality of units: a motherboard 4, one or more mass storage devices, a power supply 11, and one or more transmission devices 9. The motherboard or base card 4 is connected to the control device 1 via a plurality of connections 5A, 5B, 6. The connection 5A may e.g. be a data connection which may be used for data transfer between the base card 4 and the control device 1, while the connection 5B may e.g. be a command and
20 control connection so that the control device can command and control the base card 4. The connection 6 illustrates a current connection between the control device 1 and the base card 4. This connection 6 may be used for supplying the base card 4 with current.
25

30 The control device 1 is likewise connected to the power supply 11 via the power connection 10, which is adapted to feed a current from the power supply 11 to the control device 1. As mentioned, the units in the computer also comprise one or more mass storage devices. In the embodiment shown, these mass storage devices comprise: a hard
35

disk 7, a CD-ROM drive 8 and a floppy disk drive 18. It should be mentioned, however, that many different mass storage devices may be used in this connection. In addition to hard disk, floppy disk drive and CD-ROM drive, 5 mention may be made of e.g.: ZIP drive, SyQuest drive, MO drive, band stations, RAM cards, RAM disks.

In the same manner as the control device 1 was connected to the base card 4 by a plurality of connections, the 10 control device is connected to the other units. In the example shown, the control device 1 is connected to the hard disk 7 via the connections 3A and 12A. The connection 3A illustrates a power connection which is adapted to feed current from the control device 1 to the hard 15 disk 7. The connection 12A illustrates a data connection which is adapted to carry data to and from the control device 1 and the hard disk 7. In the example shown, there are thus just two connections 3A, 12A between the control device 1 and the hard disk 7, but a larger number of 20 connections might be present of course, e.g. there might be a number of control and command connections between the control device 1 and the hard disk 7 so that the control device 1 could control the function of the hard disk. These connections, however, are not shown in the present 25 case.

Correspondingly, the control device 1 is connected to the other mass storage devices. Thus, there are connections 30 between the control device 1 and the CD-ROM drive 8, and in the example shown the connection 3B illustrates a command and control connection, whereby the control device can command and control the function of the CD-ROM drive 8. The connection 12B illustrates a power connection which is adapted to supply the CD-ROM drive 8 with current. The floppy disk drive 18 is likewise connected to 35 the control device 1 by a plurality of connections. In

this case, too, two connections are shown, even though any number of connections may be provided between these units of course, and the connection 3D illustrates a data connection, while a command and control connection is illustrated by the connection 12D.

Finally, the units of the computer comprise a transmission device 9 which, like the other units, is connected to the control device 1. Like for the other units, the connections between the control device 1 and the transmission device 9 illustrate that a plurality of different connections may be provided between these. For example, the connection 3C may conceivably be a power connection, while the connection 12C may illustrate a data connection.

It should be noted that even though all the units in the example shown are connected to the control device 1, the computer may of course also contain a plurality of units which are not connected to the control device, but which operate by having a direct connection to one or more other units in the computer 19. Such units, however, are not illustrated in the figure, since these are not specially relevant relative to the invention.

As will appear from the figure, the control device 1 is thus connected to a plurality of the units of the computer. The control device is arranged such that it can connect and disconnect the units in such a manner that a connected unit may be caused to connect to another connected unit, and so that disconnection of a unit can prevent other units from contacting this unit. The computer 19 is adapted to operate in at least two states, and the control unit 1 is adapted to connect and disconnect the units in dependence on the state in which the computer is to operate. For example, it is conceivable that in a

given state the computer does not allow access to the hard disk 7. In this situation, the control device 1 may thus disconnect the unit 7, while units that should desirably be accessible to other units in the computer are 5 connected before start.

As will be described below, the control device 1 is arranged such that one or more codes may be supplied to it, and the control device 1 comprises means which specify 10 the relation between codes and said states. These means are adapted to select the state in which the computer is to operate on the basis of the given code.

The control device 1 can thus cause the computer to assume a plurality of states on the basis of one or more supplied codes. By connecting a large number of units to the control device it is thus possible to specify a large 15 number of states in which the computer can operate, and by allowing the control device to be connected to the base card 4 it is e.g. also possible to disconnect the 20 base card 4 and thereby prevent the computer from functioning. This may e.g. be utilized in the situation where the supplied code or codes are not accepted by the control device. These conditions will be described more 25 fully below.

It may moreover be mentioned that the computer 19 may comprise a cabinet 2 in which one or more of said units are incorporated. In the case shown, the cabinet 2 thus 30 encloses all the units of the computer and the control device 1.

As will appear from the figure, the computer 19 comprises a cabinet 2. In a particularly expedient embodiment, the 35 control device 1 is adapted to detect whether the cabinet 2 has been opened and, on the basis of this, to select

the state in which the computer or the PC operates, e.g. by causing the PC or parts thereof to assume a locked state so that this/these cannot be used directly. This may be implemented in that the control device is connected to a mechanical contact 43 in the PC. The contact 43 is activated by starting the PC. By allowing the unit to be driven by its own power supply, e.g. a battery, it is ensured that this detection may be performed even when the PC is turned off. Unwarranted access causes a signal to be applied to the control device 1 which can then block all or selected units. The power supply to the PC may be interrupted hereby. The administrator has to start the PC again. In an expedient embodiment, the cabinet 2 may be locked.

15

Figure 2 illustrates a possible structure of a control device 1 according to the invention. The control device comprises input devices 20 and 21, means 24 specifying a relation between codes and states, and means 32 adapted to connect and disconnect units. As will appear from the figure, the means 32 have a plurality of connections which are numbered corresponding to the connections in figure 1. These connections are contemplated to establish connections between the means 32 and various units in the computer 19.

As mentioned before, the control device 1 is adapted to connect and disconnect a plurality of coupled units. This connection and disconnection is performed in the example shown by using the means 32, which are adapted to perform this connection and disconnection by using the supplied connections. In the case where a connection is a data connection, this connection and disconnection may be performed by the means 32 by making or breaking said data connections, e.g. by using a switch, a relay or the like. In the case where said connections are command and con-

trol connections, the connection and disconnection may be performed by affecting selected command and control connections in a suitable manner. For example, a state which just allows reading of data from a mass storage device 5 may be achieved in that the control device 1 feeds a read only signal to the mass storage device concerned. Corresponding connection and disconnection of units may be performed by using other suitable control and command signals, such as M/B, reset and device enable of the sys- 10 tem.

As will appear from the figure, the input devices 20 and 21 are connected to the means 24 which specify a relation between codes and states. This allows a user to allocate 15 one or more codes to the means 24 e.g. by using the keyboard 20, by using a card reader 21, or by a combination of these. On the basis of the supplied code, the means 24 may indicate a state, and by feeding the information on this state to the means 32, these means 32 may be caused 20 to perform the connection or disconnection corresponding to the desired state.

Many different input devices may be used of course. The keyboard 20 may thus be implemented in several known ways 25 and may e.g. be a numeric keyboard, alphanumeric keyboard, both numeric and alphanumeric keyboard, etc. Correspondingly, the card read input device 21 may be implemented in different known ways, e.g. as one which is a magnetic card reader, a chip card reader or any other 30 card that can contain the necessary code. It is additionally noted that other types of input devices may be used of course. Among many possible options it may e.g. be mentioned that finger-prints, face recognition and voice 35 recognition are used in connection with personal recognition, and that, on the basis of this, the control unit 1

can select a person-specific state in which the computer is to operate.

It is noted that there are also several ways in which a user may be required to indicate one or more codes. It may e.g. be expedient to combine said input devices by entering these codes. For example, a user identification may be made in three stages: a code from a smart card reader 21, a PIN code entered via the keyboard 20, and the use of EPROM containing a unique number of the control device. These three numbers together will provide a high certainty of the user's physical presence at a given time and a given computer.

It is e.g. conceivable that a computer is used jointly by two users, and that each user is therefore given a code which specifies the desired state in which the computer is to operate when this user uses the computer. This may be described by the following example.

Several users may use the same machine with different rights and set-ups, there being used dedicated hardware for the individual user. For example, the same users may run different risks e.g. with respect to virus on various hardware configurations. Correspondingly, use of several operating systems in the same computer are made possible in a simple manner. Additionally, it may be ensured that a user's software does not destroy another user's set-up or data, such as e.g. the son's games or the father's accounts.

As will appear from the figure, the control device 1 also comprises a supervisory unit 35. This supervisory unit 35 may e.g. be adapted to currently supervise contact with one or more of the connected units, and is adapted, on the basis of this, to select the state in which the com-

puter operates. This ensures that it is possible to record when a unit is connected or disconnected and optionally store relevant information on this, e.g. time, the change made and subsequent acts. On this basis, the control unit 1 can determine the state in which the computer is to operate, e.g. that it must be brought into a locked state where further use is not readily possible for a user without special system rights. The various conditions in connection with modem, network card and ISDN adapter will be described below.

Modem. In connection with a connected modem the control device expediently uses a modem control unit. This modem is adapted to be disconnected or connected according to user ID and user set-up determined by administrator. The modem control device is an electronic unit that interrupts the line physically in the modem before ring detection. Hereby, the modem cannot be controlled through the line. This ensures that modem set-up is controlled according to user ID and set-up. Also provided is a sensor circuit for measuring whether the telephone line has been interrupted as a safeguard against switching of connections to external networks (unintentional change bypassing ID). This takes place by measuring the line voltage.

Network card. It is adapted to be disconnected or connected according to user ID and user set-up determined by administrator. Also provided is a sensor circuit for measuring whether the network line (UTP) has been interrupted as a safeguard against switching of connections to external networks (unintentional change bypassing ID). A sensor circuit measures the presence of connection/disconnection of a network connecting line (patch cable). Furthermore, the link signal is also read in standby (only mains voltage on the power supply). This is a security for the network administrator that a user or

others do not malevolently or unintentionally switch the network connections. In case of interruptions or switching of networks, the unit locks the machine and all hardware is interrupted until a valid condition of access (smart card, password, etc.) has been satisfied. The set-up determines who has administrator rights.

ISDN adapter. It is adapted to be disconnected or connected according to user ID and user set-up determined by administrator. Also provided is a stimulation/sensor circuit for measuring whether the ISDN connection has been interrupted as a safeguard against switching of connections to external networks (unintentional change bypassing ID). This is a security for the network administrator that a user or others do not malevolently or unintentionally switch network connections. In case of interruptions or switching of ISDN the unit locks the machine and all hardware is interrupted until the condition of access (smart card, password, etc.) has been satisfied. The set-up determines who has administrator rights.

As will appear from figure 2, the control device 1 comprises a cabinet 50. In the same manner as described in connection with the cabinet 2 of the computer, the control device may be adapted to select the state in which the computer is to operate on the basis of information on whether the cabinet has been opened.

Although it is not shown directly in figure 2, a control device 1 will expediently be based on a control unit which performs said control of the units of the computer in cooperation with the other parts of the control device 1. This is described more fully in connection with figure 3.

Figure 3 shows a simple example of how the control device may conceivably be built. The control device comprises a control unit 31 which may be a normal CPU, a ROM 61 that can contain a program code and static data, as well as a 5 RAM 62 that may be used in a known manner as a data storage which may be changed currently. These units may e.g. be connected to a data/control bus 63, just as the other units of the control device 1 may be connected to this bus 63. As will appear from the figure, a control unit 1 10 will thus be in the form of a normal computer in this embodiment, and in this situation the control device is thus basically built as a PC which may be incorporated in another computer so that the control device 1 can connect and disconnect units in the computer 19 depending on the 15 state thereof.

That the control device 1 may be built as an independent PC in the computer 19 gives a number of advantages. For example, it provides the possibility of using the control 20 device 1 for independent work on the Internet. The advantage of this property is that, without any risk of spreading of virus from the network, a user can be on the Internet simultaneously with local networks without having to re-start the PC.

25 Thus, in addition to providing the possibility of controlling rights at hardware level, the control device 1 also provides the possibility of using state-specific user interfaces. It should be stressed that the control 30 unit 1 may be implemented in several ways, but as an example it may be mentioned that this may conceivably be constructed such that it can be built into a standard 5 $\frac{1}{4}$ inch slot in an ATX 2.01 (or higher) compatible PC, but it may also conceivably be connected in a suitable manner 35 to any other computer.

When the means 24 specifying a relation between codes and states are stored in a non-volatile memory, it is ensured that these rights can be specified only by a selected person, e.g. a system administrator who has special access to these, e.g. by being allowed to use the computer in a state which gives both read and write rights to the means 24.

In an embodiment, the control device 1 comprises a supervisory unit 35 which is connected to one or more connections to the peripheral units of the computer 19. This is particularly expedient when the supervisory unit is connected to peripheral units which it is possible to identify. Hereby, security may be obtained e.g. against switching of connections to units, e.g. connections to external networks.

In a further embodiment, the supervisory unit 35 comprises a measuring device 42 which is connected to the means 32. The measuring device is adapted to perform measurement of operational data, such as air humidity, temperature, shakes/vibrations, current, voltage and effect at suitable places in the computer, and, on the basis of this, the control device 1 is adapted to select the state in which the computer operates. Operational voltages are measured e.g. on power supply and peripheral units. The power consumption is determined e.g. on the basis of current/voltage measurements on units and in total from the power supply.

30

This protects against damage to units because of unacceptable "operational data", e.g. when a given specified threshold value is exceeded.

35 In a further expedient embodiment, the supervisory unit 35 comprises a timer 41 which may likewise be connected

to the means 32. The timer or the clock 41 may e.g. be used for measuring the total amount of time which a given user has used the computer or selected units, such as modem or other, but may also be used for ensuring that the 5 computer can only be used for given purposes at given points in time by given users. This control may be performed in that the clock 41 is e.g. connected to the means 32 which perform suitable disconnection of units on the basis of information from the clock.

10

It is noted that the figures are schematic and simplified for clarity, and they just show details which are essential to the understanding of the invention, while other details are omitted. The same reference numerals have 15 been used throughout for identical or corresponding parts.

Some examples of embodiments of a control device according to the invention and a computer with a circuit according to the invention have been shown in the foregoing. It should be stressed, however, that the invention is not restricted to the embodiments shown, but may be embodied in other ways within the subject-matter defined in the following claims. For example, the control device 20 1 may comprise an output device, such as an LCD display or a conventional screen. This ensures that the control device can provide the user with various items of information. However, the control unit may also be connected to the screen of the computers and be adapted to provide 25 the user with information via the screen.

30

P a t e n t C l a i m s :

1. A control device for a computer having one or more units, said computer being capable of operating in at least two states, said control device being adapted to connect and disconnect said units in dependence on the state in which the computer is to operate, characterized in that the control device comprises an input device by means of which one or more codes may be supplied to the control device, and means which specify a relation between codes and said states, and which are adapted, on the basis of this, to select the state in which the computer is to operate before the computer is connected to a power supply and is configured.

2. A control device according to claim 1, characterized in that it comprises one or more connections to one or more of said units, and that the control device is adapted to perform said connection and disconnection by the use of said connections.

3. A control device according to claim 2, characterized in that one or more of said connections are data connections, and that the control device is adapted to perform said connection and disconnection by making and breaking said data connections.

4. A control device according to claim 2 or 3, characterized in that one or more of said connections are command and control connections, and that the control device is adapted to perform said connection and disconnection by affecting said command and control connections.

35

5. A control device according to claim 2, characterized

terized in that one or more of said connections are power connections, and that the control device is adapted to perform said connection and disconnection by making and breaking said current connections.

5

6. A control device according to one or more of the preceding claims, characterized in that said input device comprises a keyboard by means of which said one or more codes may be supplied to the control device.

10

7. A control device according to one or more of the preceding claims, characterized in that said input device comprises a card reading unit by means of which said one or more codes may be supplied to the control device.

15

8. A control device according to one or more of the preceding claims, characterized by comprising a device adapted to ensure that said specification of the relation between said codes and said states is allowed only after the submission of a given code.

20

9. A control device according to one or more of claims 2-8, characterized in that it comprises a supervisory unit which is adapted to currently supervise contact with one or more of said units both before, during and after the first start and re-start, and that the control device is adapted, on the basis of this, to select the state in which the computer is to operate.

25

10. A control device according to claim 9, characterized in that said supervision comprises identification of one or more of said units.

30

35 11. A control device according to claim 9 or 10,

5 characterized in that said supervisory unit is adapted to perform measurement of operational data, and that the control device is adapted, on the basis of this, to select the state in which the computer is to operate.

10 12. A control device according to one or more of claims 9-11, characterized in that it is enclosed by a cabinet, and that the supervisory device comprises means adapted to currently determine whether the cabinet has been opened, and that the control device is adapted, on the basis of this, to select the state in which the computer is to operate.

15 13. A control device according to one or more of the preceding claims, characterized in that the supervisory device comprises a timer device, and that the control device is adapted, on the basis of this, to select the state in which the computer is to operate.

20 14. A control device according to one or more of the preceding claims, characterized by comprising an output device which is adapted to show information on the current state of the computer.

25 15. A control device according to one or more of the preceding claims, characterized in that it comprises one or more measuring devices adapted to measure external influences, such as temperature, air humidity and vibrations, and that the control device is adapted, on the basis of this, to select the state in which the computer is to operate.

30 16. A computer comprising a control device, said computer comprising one or more units, said computer being capable of operating in at least two states, said control

device being adapted to connect and disconnect said units in dependence on the state in which the computer operates, characterized in that the control device additionally comprises an input device by means of 5 which one or more codes may be supplied to the control device, and means which specify a relation between codes and said states, and which are adapted, on the basis of this, to select the state in which the computer is to operate.

10

17. A computer according to claim 16, characterized in that the units comprise a control unit.

18. A computer according to claim 16 or 17, characterized in that it is enclosed by a cabinet, and that the supervisory device comprises means adapted to currently determine whether the cabinet has been opened, and that the control device is adapted, on the basis of this, to select the state in which the computer 20 is to operate.

19. A method of connecting and disconnecting units in a computer which can operate in at least two states, wherein the connection and the disconnection are performed in dependence on the state in which the computer 25 is to operate, characterized in that the state in which the computer is to operate is selected on the basis of one or more supplied codes and a specified relation between codes and said states.

30

20. Use of a control device according to one or more of claims 1-15 in connection with a personal computer.

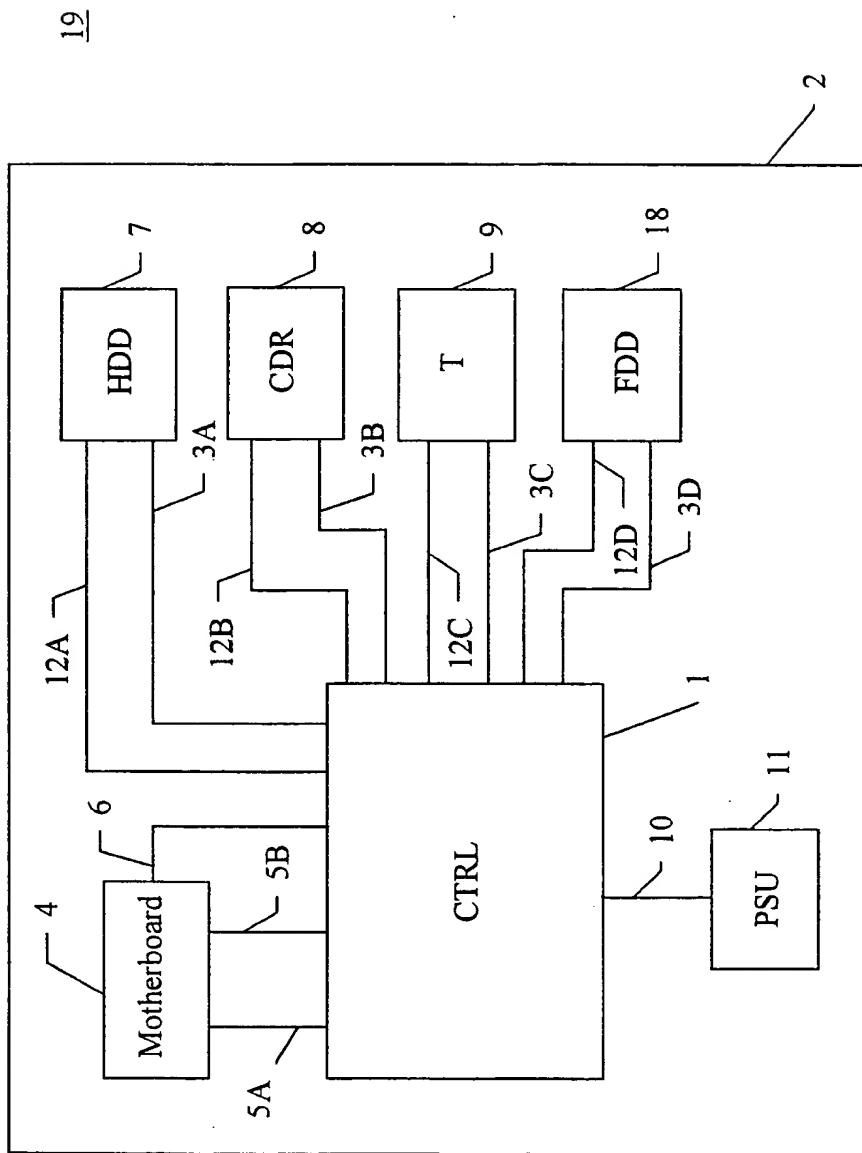


FIG. 1

2 / 3

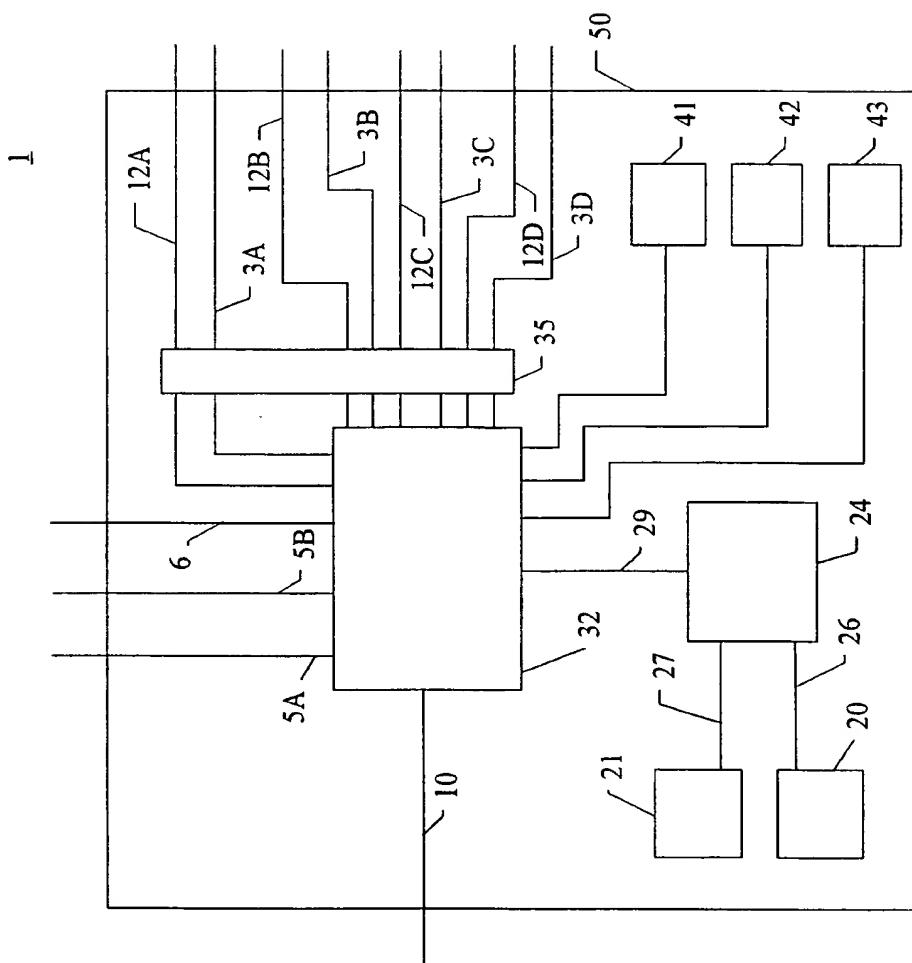


FIG. 2

1

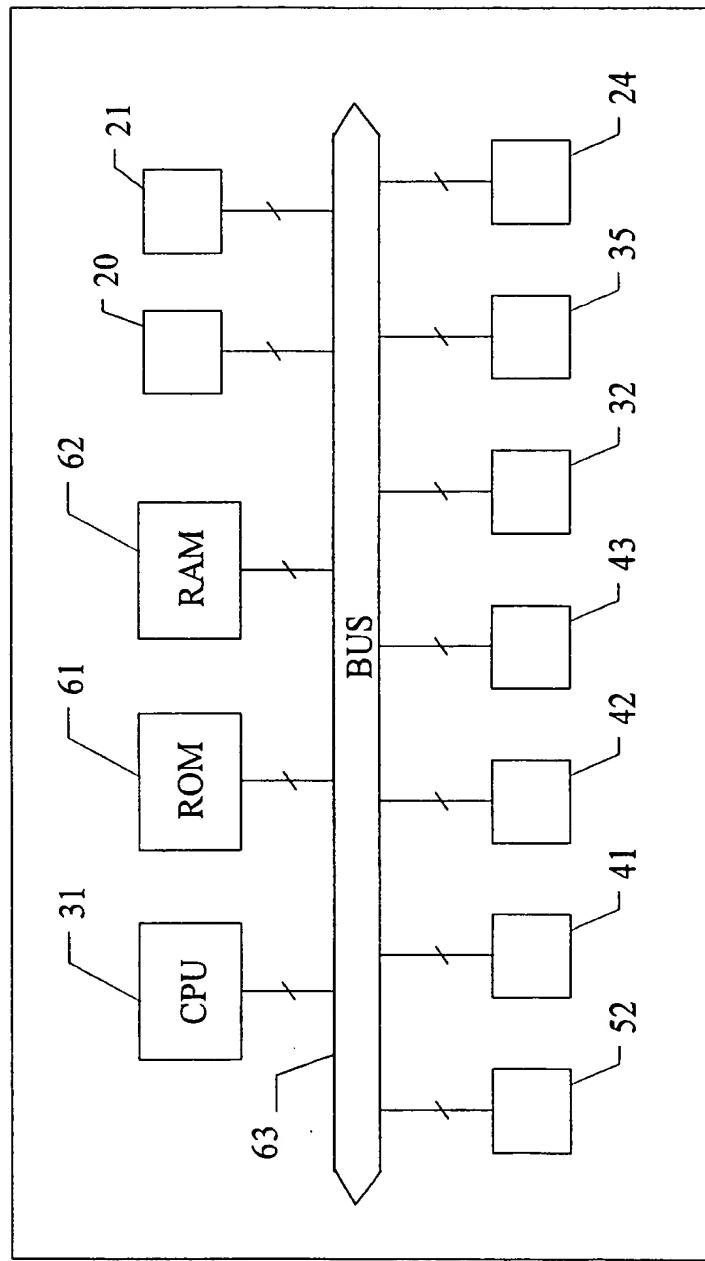


FIG. 3

INTERNATIONAL SEARCH REPORT

International application No.

PCT/DK 00/00005

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: G06F 1/00, G06F 12/14

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5202997 A (ARATO), 13 April 1993 (13.04.93), column 1, line 61 - column 2, line 50; column 5, line 20 - column 6, line 47, figures 3,4, claim 1, abstract	1-6,8,16,17, 19,20
Y	See whole document --	7,9-15,18
Y	WO 9427224 A1 (NATIONAL SEMICONDUCTOR CORPORATION), 24 November 1994 (24.11.94), page 3, line 24 - page 4, line 16, abstract --	9-10
Y	US 5574786 A (DAYAN ET AL), 12 November 1996 (12.11.96), column 4, line 24 - line 50, abstract --	11,12,15,18

 Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"I" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"U" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

Date of mailing of the international search report

11 May 2000

17-05-2000

Name and mailing address of the ISA/
Swedish Patent Office
Box 5055, S-102 42 STOCKHOLM
Facsimile No. + 46 8 666 02 86

Authorized officer

Jan Silfverling/CL
Telephone No. + 46 8 782 25 00

INTERNATIONAL SEARCH REPORT

International application No.

PCT/DK 00/00005

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5313639 A (CHAO), 17 May 1994 (17.05.94), column 1, line 38 - column 2, line 12, abstract	1-2,6
Y	column 1, line 38 - column 2, line 12, abstract	3-5
Y	---	
Y	US 5434562 A (REARDON), 18 July 1995 (18.07.95), column 3, line 50 - line 65	3-5
X	---	
X	US 5187352 A (BLAIR ET AL), 16 February 1993 (16.02.93), column 2, line 67 - column 3, line 54, figures 1-3, claim 1, abstract	1-5,7,8,13, 14,16,17,19, 20
X	---	
X	WO 9013084 A1 (EMPIRICAL RESEARCH SYSTEMS INC.), 1 November 1990 (01.11.90), page 4, line 27 - page 6, line 16; page 5, line 29 - line 33; page 13, line 16 - line 38, claim 1, abstract	1,8
X	---	
X	US 5555373 A (DAYAN ET AL), 10 Sept 1996 (10.09.96), claim 2, abstract	1,13

INTERNATIONAL SEARCH REPORT

Information on patent family members

02/12/99

International application No.	PCT/DK 00/00005
-------------------------------	-----------------

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
US 5202997 A	13/04/93	CA 1267234 A		27/03/90
		GB 2181281 A,B		15/04/87
WO 9427224 A1	24/11/94	DE 69414105 D,T		02/06/99
		EP 0698240 A,B		28/02/96
		JP 8511887 T		10/12/96
		US 5548782 A		20/08/96
US 5574786 A	12/11/96	JP 8272695 A		18/10/96
US 5313639 A	17/05/94	NONE		
US 5434562 A	18/07/95	NONE		
US 5187352 A	16/02/93	NONE		
WO 9013084 A1	01/11/90	AU 5448390 A		16/11/90
		CA 2014868 A		19/10/90
		EP 0422184 A		17/04/91
		US 5144659 A		01/09/92
		US 5289540 A		22/02/94
US 5555373 A	10/09/96	NONE		